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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,740	02/20/2004	Yuji Hori	AOY0102PUSA	6589

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EXAMINER
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LIN, ING HOUR

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 06/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/783,740

Applicant(s)

HORI ET AL.

Examiner

Ing-Hour Lin

Art Unit

1725

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-7 and 9-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-7 and 9-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1, 3, 5, 7, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 53119724 in view of JP 54151508 and further in view of Karlsson.

JP '724 (see abstract) teaches the claimed water-soluble casting mold and method for manufacturing the mold including mixing refractory granular material with binder containing magnesium sulfate heptahydrate ( $\text{MgSO}_4 \cdot 7 \text{H}_2\text{O}$ ) and packing the mixture in a mold and drying the mixture to produce the claimed mold. JP '724 fails to teach the use of water-based adhesive and retaining a portion of crystal water in the magnesium sulfate.

However, JP '508 (see abstract) teaches the use of water-based adhesive such as sulfate of aluminum, magnesium, sodium, nickel and in the manganese and phosphate of aluminum and sodium in a mold containing gypsum for the purpose of improving mold strength. Karlsson (col. 1, lines 64+) teaches the use of binding water in the form of crystallization water in water-based adhesive for the purpose of joining material with improved dimensional stability and strength of the joined material when the adhesive compound having at least one mole or four moles of water per mole of the formed compound (col. 3, lines 34+). It would have been obvious to one having ordinary skill in the art to provide JP '724 the use of use of water-based adhesive and retaining a portion of crystal water in the magnesium sulfate as taught by JP '508 and Karlsson in order to effectively control crystal (crystallization) water retained in the a casting mold containing magnesium sulfate and water-based adhesive such as sulfate of aluminum, sodium, nickel and in the manganese and phosphate of aluminum and sodium over a wide high temperature range and enhancing high temperature resistance of the mold.

4. Claims 4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 53119724 in view of JP 54151508 and further in view of Karlsson and Seeney et al.

JP 53119724 in view of JP 54151508 and further in view of Karlsson fails to teach the use of improved binder including potassium dihydrogen phosphate.

However, Seeney et al (col. 1, lines 33+) teach the use of improved binder including potassium dihydrogen phosphate and aluminum phosphate (a product of aluminum dihydrogen phosphate after heating and losing water) for the purpose of preventing air pollution (col. 1, lines 28+) when molten metal cast in the mold. It would have been obvious to one having ordinary

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skill in the art to provide JP '724 in view of JP 54151508 and further in view of Karlsson the use of improved binder including potassium dihydrogen phosphate and aluminum phosphate as taught by Seeney et al in order to prevent air pollution when molten metal cast in the mold.

5. Claims 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 53119724 in view of JP 54151508 and further in view of Karlsson and Natori et al.

JP 53119724 in view of JP 54151508 and further in view of Karlsson fails to teach the use of improved binder including magnesium chloride.

However, Natori et al (col. 1, lines 33+) teach the use of improved binder including magnesium chloride in a water-soluble casting mold for the purpose of improving shaping quality of cast metal in the mold. It would have been obvious to one having ordinary skill in the art to provide JP 54151508 and further in view of Karlsson the use of improved binder including magnesium chloride as taught by Natori et al in order to improve shaping quality of cast metal in the mold.

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 53119724 in view of JP 54151508 and further in view of Karlsson and Melling et al.

JP '724 in view of JP 54151508 and further in view of Karlsson fails to teach the use of microwave heating.

However, Melling et al (col. 3, lines 34+)) teach the use of microwave (col. 8, lines 18+) for the purpose of selective heating and drying free water but retaining binding water in the binder and to produce a mold having high strength and retaining a portion of crystal water. It

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would have been obvious to one having ordinary skill in the art to provide JP '724 in view of JP 54151508 and further in view of Karlsson the use of selective heating by microwave as taught by Melling et al in order to produce a mold having high strength and retaining a portion of crystal water.

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 53119724 in view of JP 54151508 and further in view of Karlsson and Nishio et al.

JP '724 in view of JP 54151508 and further in view of Karlsson fails to teach the use of a ventilative ceramic mold.

However, Nishio et al (col. 2, lines 29+)) teach the use of a ventilative ceramic mold 7 for the purpose of exhausting air in the molding granular material to produce a mold having high strength. It would have been obvious to one having ordinary skill in the art to provide JP '724 in view of JP 54151508 and further in view of Karlsson the use of a ventilative ceramic mold as taught by Nishio et al in order to exhaust air in the molding granular material to produce a mold having high strength.

#### ***Response to Arguments***

8. Applicant's arguments in the remarks filed 4/11/06 have been fully considered but they are not persuasive. Applicant's arguments do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections. In the remark, applicant argued that the invention of a water-soluble casting mold has the distinct properties in page 7, such as

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the good combination of mold strength in both dry state and at the time of moisture absorption and collapsing property for facilitating recovery of binder. However, the amended at least 50% magnesium sulfate in claims 1 and 7 does not clearly point out the patentable novelty because the particular amount of magnesium sulfate in the binder usually does not contribute the distinct weight.

***Conclusion***

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ing-Hour Lin whose telephone number is (571) 272-1180. The examiner can normally be reached on M-F (9:00-5:30).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

I-H Lin

I.-H. Lin

6-21-06

KEVIN KERNS *Kevin Kerns 6/21/06*  
PRIMARY EXAMINER